



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,154	08/21/2001	Kouichi Tanigawa	09792909-5154	7708

33448 7590 09/11/2003

ROBERT J. DEPKE LEWIS T. STEADMAN  
HOLLAND & KNIGHT LLC  
131 SOUTH DEARBORN  
30TH FLOOR  
CHICAGO, IL 60603

EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/934,154

Applicant(s)

TANIGAWA, KOUICHI

Examiner

W. David Coleman

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuda et al., Japanese Patent Abstract 11-040787 **Drawings 1A-2C**.

3. Pertaining to claim 1, Matsuda teaches an improved process for producing a solid-state imaging device comprising the steps of: (see FIGS. 1A-2C)

forming a light receiving portion of a pixel in a region on the substrate surface, forming a convex lens with an upwardly curved surface which is embedded in an inter-layer dielectric above said light-receiving portion, and forming an on-chip lens above said convex lens, wherein said improvement comprises forming sequentially said light-receiving portion, forming an inter-layer dielectric having a depression in its surface above said light-receiving portion, forming on said inter-layer dielectric a light transmitting film having in its surface a concave conforming to said depression, forming at a position that covers said concave portion on said light transmitting film a mask layer with a convexly curved surface without etching or planarizing the light

Art Unit: 2823

transmitting film, and etching said mask layer and said light transmitting film all together, thereby making said light transmitting film into a lens.

4. Pertaining to claim 2, Matsuda teaches a process for producing a solid-state imaging device as defined in Claim 1, which further comprises, following the step of forming said light-receiving portion, the steps of forming electrodes to transfer charges generated by said light-receiving portion, said

electrodes being positioned above both sides of said light-receiving portion and being insulated from said substrate, forming a shielding film which covers the step of said charge transfer electrodes with an opening above said light-receiving portion, said shielding film being insulated from said charge transfer electrodes, and forming said inter-layer dielectric covering said shielding film and its opening in such a way that said depression is formed in the surface of said inter-layer dielectric in conformity with the step of said charge transfer electrode and the step of said shielding film.

5. Pertaining to claim 3, Matsuda teaches a process for producing a solid-state imaging device as defined in Claim 1, which further comprises, following the step of forming said light-receiving portion, the step of softening said inter-layer dielectric by heat treatment, thereby adjusting a depth of said depression.

6. Pertaining to claim 4, Matsuda teaches a process for producing a solid-state imaging device as defined in claim 1, which further comprises the steps of forming a resist pattern as said mask layer on said light transmitting film and softening said resist pattern by heat treatment, thereby adjusting the curvature of the surface of said resist pattern [0018].

Art Unit: 2823

7. Pertaining to claim 5, Matsuda teaches a process for producing a solid-state imaging device as defined in Claim 1, wherein the etching step is carried out under the condition that said mask layer and said light transmitting film have almost the same selectivity.

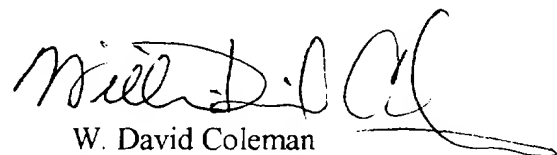
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 703-305-0004.

The examiner can normally be reached on 9:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
W. David Coleman  
Primary Examiner  
Art Unit 2823

WDC